

ENTOMOLOGY.—*A new species of blister beetle from Arizona.*¹
GUIDO G. MAYDELL.² (Communicated by HAROLD MORRISON.)

Epicauta crassitarsis, n. sp.

Reddish pitchy brown, clothed with luteous or cinereolutescent pubescence; on each elytron a whitish longitudinal line. Head black, shining, coarsely but sparsely punctate and clothed with a sparse pubescence; median line distinct; eyes large, feebly emarginate anteriorly, coarsely granulated; antennae dark brown, the first joint enlarged apically, reddish except the apex and provided with rather long cinereous hairs, the second joint with the basal half reddish, the third joint elongated not quite as long as the first two combined, the following decreasing in length and somewhat flattened apically. Prothorax subquadrate, a little longer than wide, parallelsided in three-fourths of the length; median line distinct, punctation and pubescence the same as on the head. Elytra parallelsided, finely punctate-granulate; on each elytron a narrow median line of lighter pubescence not quite reaching the apex; the sutural, apical and lateral margins also whitish. Abdomen and sterna black, the legs reddish, both sparsely clothed with cinereous pubescence. The hind tibial spurs stout, acuminate to the tip. Length 10–11 mm.

Male.—Anterior tibiae with a single short and curved terminal spur. The tarsi of the intermediate legs with the three basal joints bulb-like, enlarged; the first joint the largest and curved in its basal half.

Female.—The anterior tibiae bicalcarate; the tarsi of the intermediate legs normal.

Type.—Male, Tempe, Ariz., Sept. 7, 1933, K. B. McKinney (4–145); 3 paratypes, 1 male, 2 females, labelled in the same way, all in the collection of the U. S. National Museum, Washington, D. C.

[Just before his death a supplementary series of this species, 20 specimens, was received from the same source, but collected by Mr. McKinney on alfalfa Sept. 20, 1934, about a year after the type series above described. Mr. Maydell unfortunately had no opportunity to reconsider his first draft based on only the four above listed types. H. S. B.]

ZOOLOGY.—*New nematodes of the genus Longistriata in rodents.*³
G. DIKMANS, Bureau of Animal Industry. (Communicated by
MAURICE C. HALL.)

Longistriata musculi, n. sp.

Figs. 1–7.

Specific diagnosis.—*Longistriata*: Worms small, with anterior end of body usually coiled in a loose spiral. Cephalic cuticle slightly inflated and marked with annular striations, inflation extending for a distance of 65 to 75 μ ; beyond this point a cuticular expansion marked by longitudinal striae in-

¹ Received December 3, 1934.

² During the few days before his sudden death on September 28, 1934, Mr. Maydell had been adding to his manuscript revision of the Meloid genus *Epicauta* from the data assembled in the U. S. National Museum. The abrupt termination of his labor leaves this revision uncompleted. Among his last written additions the following description of a peculiar southwestern species about which he had spoken with much interest is complete and ready for publication. H. S. Barber.

³ Received December 11, 1934.

creasing in number from anterior to posterior end. Immediately posterior to cervical inflation longitudinal striae numbering about 6 to 8; in posterior portion striae numbering about 18 to 20, all striae being marked by fine cross striations. Head rounded; mouth and circumoral papillae inconspicuous. Esophagus 320 to 450 μ long by 30 to 40 μ wide in its terminal portion. Nerve ring near middle of esophagus. Excretory pore near beginning of posterior fourth of esophagus.

Male 3.25 to 4.5 mm. long by 95 to 100 μ in maximum diameter immediately anterior to bursa. Bursa relatively large and symmetrical. Ventro-ventral ray shortest and slenderest, and externo-dorsal longest and thickest, of paired rays; remaining paired rays about equal in size; tips of rays approximately equidistant at margin of bursa except for postero-lateral and externodorsal, these rays approximated to each other. Dorsal ray divided into 2 branches in its distal third, each branch again dividing near tip, external branch of second bifurcation longer than inner branch. Spicules 390 to 420 μ long, straight and filiform, with triangular enlargement at distal ends. Gubernaculum absent.

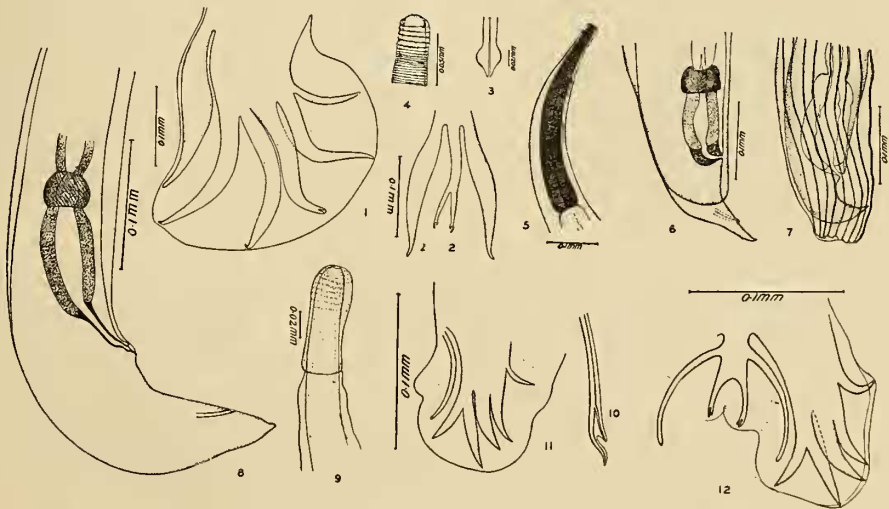
Female 4.25 to 6.75 mm. long and about 100 to 160 μ wide in region of proximal portion of ovejector. Ovejector single, stout, muscular, about 100 μ long. Vulva to anus, 90 μ ; anus to tip of tail, 30 μ . Eggs 55 to 60 μ long by 30 to 32 μ wide.

Host.—*Mus musculus*.

Location.—Small intestine.

Locality.—Jeanerette, Louisiana, U. S. A.

Type specimens.—U. S. National Museum Helminthological Collection No. 30456.



Figs. 1-7.—*Longistriata musculi*. Fig. 1. Lateral view of bursa. Fig. 2. Dorsal rays of bursa. Fig. 3. Terminal portion of spicules. Fig. 4. Anterior portion of head. Fig. 5. Anterior portion of body. Fig. 6. Posterior portion of body of female, showing ovejector. Fig. 7. Posterior portion of body of female, showing longitudinal striations of cuticle.

Figs. 8-12.—*Longistriata norvegica*. Fig. 8. Posterior portion of body of female, showing ovejector. Fig. 9. Anterior portion of body, showing cuticular inflation. Fig. 10. Terminal portion of spicule. Figs. 11 and 12. Bursa.

Longistriata norvegica, n. sp.

Figs. 8-12.

Specific diagnosis.—*Longistriata*: Worms small, usually coiled in a loose spiral. Cervical inflation characteristic of this group of nematodes, about 75 to 80 μ long by 25 to 30 μ wide, the anterior widest portion marked by annular striations. Width of head, exclusive of inflation, about 16 μ . Cuticle of body inflated and marked by longitudinal striae, each striation showing cross striations. Esophagus 275 to 300 μ long and 20 to 25 μ wide in its distal portion. Nerve ring about 150 to 175 μ , and excretory pore about 20 to 27 μ , anterior to termination of esophagus.

Male about 4 to 4.5 mm. long by 45 to 50 μ wide just anterior to bursa. Cuticular inflation extending on ventral side of body to within 30 to 35 μ anterior to commencement of bursa. Bursa symmetrical, with 2 lateral lobes and 1 dorsal lobe. Spicules 350 to 375 μ long, filiform, distal ends divided into 2 branches enclosed in a sheath. Gubernaculum absent. Ventro-ventral ray shortest and slenderest of the paired rays, directed forward and widely separated from latero-ventral ray. Latero-ventral, externo-lateral and medio-lateral rays of about equal thickness and length, the first 2 being parallel and diverging only slightly in their distal portions; externo-lateral the thickest ray; medio-lateral ray the longest ray and directed straight towards margin of bursa. Postero-lateral ray originating from a common stem with medio-lateral and directed dorsally; these two rays widely separated at their tips. Externo-dorsal rays and dorsal ray originating from a common stem, the former being very slender and curving outward from dorsal; stem of dorsal very wide and bifurcating at middle; each branch divided at tip, outer branch longer than inner. None of rays reaching margin of bursa.

Females 5 to 5.5 mm. long and about 90 μ wide in region of vulva. Single ojector, including sphincter, about 100 μ long by 40 μ wide. Vulva about 100 μ from anus; anus about 30 μ from tip of tail; tip of tail narrowing abruptly about 5 μ from end and terminating in a conical, blunt point. Eggs 60 to 65 μ long by 30 to 35 μ wide.

Host.—*Rattus* sp.

Location.—Small intestine.

Locality.—Jeanerette, Louisiana, U. S. A.

Type specimens.—U. S. National Museum Helminthological Collection No. 30457

The nematode here described under the name of *Longistriata norvegica* is very similar to the nematode described by Chandler (2) as *Longistriata adunca* from the cotton rat, *Sigmoidon hispidus*. Chandler, however, described an accessory piece or gubernaculum as being present in the nematode described by him. No such structure has been observed in the nematode described here as *Longistriata norvegica*. The writer, therefore, must accept Chandler's description as correct, pending some reexamination of his material or a comparative study of these two nematodes.

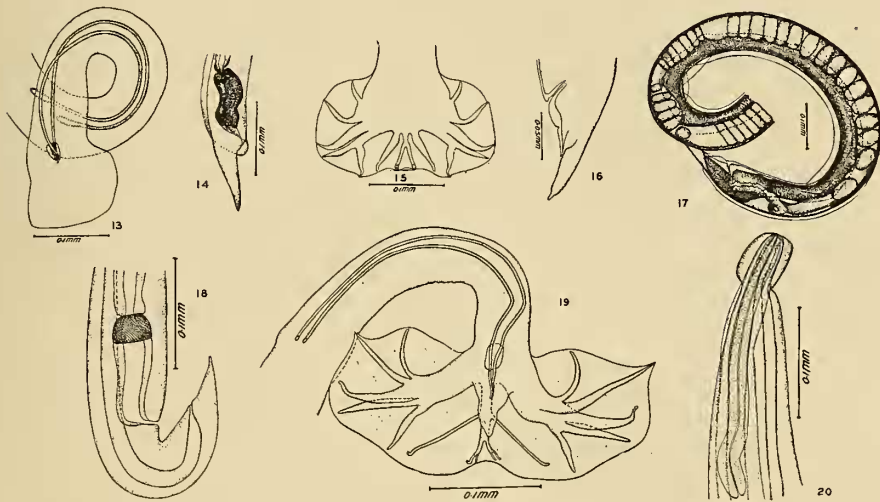
Longistriata carolinensis, n. sp.

Figs. 13-17.

Specific diagnosis.—*Longistriata*: Worms small, usually rolled in a loose spiral. Cervical inflation about 50 μ long by 30 μ wide. Cuticle of body inflated and marked with distinct longitudinal striations or bands, these in turn distinctly marked with cross-striations. Head rounded, mouth opening and circumoral papillae inconspicuous. Esophagus 280 to 310 μ long by 35 to

40 μ wide in its terminal portion. Excretory pore about 120 μ anterior to termination of esophagus. Nerve ring slightly anterior to excretory pore.

Male 2.7 to 3 mm. long and 70 to 80 μ in maximum diameter immediately anterior to bursa. Bursa symmetrical, 125 to 130 μ long and 225 to 250 μ wide when fully expanded. Ventro-ventral rays short and slender, directed forward; latero-ventral ray widely separated from and somewhat larger than ventro-ventral ray and also directed forward; externo-lateral, thickest of the paired rays, widely separated from latero-ventral, but parallel to medio-



Figs. 13-17.—*Longistriata carolinensis*. Fig. 13. Posterior portion of male, showing spicules and gubernaculum. Fig. 14. Posterior portion of female, showing ovejector. Fig. 15. Bursa. Fig. 16. Posterior portion of female, showing relative positions of vulva and anus. Fig. 17. Posterior portion of female.

Figs. 18-20.—*Longistriata dalrymplei*. Fig. 18. Posterior portion of female, showing ovejector. Fig. 19. Posterior portion of male, showing bursa and spicules. Fig. 20. Anterior portion showing cuticular inflation.

lateral except at tip, here the latter two rays diverging slightly, externo-lateral bending ventrad and medio-lateral running straight toward margin of bursa; postero-lateral ray originating from medio-lateral ray and directed posteriorly to margin of bursa, the tips of these rays widely separated, all these rays reaching margin of bursa. Externo-dorsal rays originating separately from dorsal ray; dorsal ray divided into rather long branches, each of these bifurcated at tip; branches of bifurcation equal in size. Spicules 400 to 450 μ long, filiform, with expanded proximal ends. Gubernaculum about 25 μ long by 15 μ wide.

Female about 3.5 mm. long. Ovejector single, about 80 μ long. Vulva 60 to 65 μ from anus; tip of tail 40 to 50 μ from anus. Tail narrowing abruptly shortly before its termination and ending in a blunt point. Eggs 58 μ long by 30 to 35 μ wide.

Hosts.—*Peromyscus maniculatus* (Deer mouse), and *Microtus ochrogaster* (Prairie meadow mouse).

Location.—Small intestine.

Localities.—Great Smoky Mountains, North Carolina, and Vincennes, Indiana, U. S. A.

Type specimen.—U. S. National Museum Helminthological Collection No. 30458.

Longistriata dalrymplei, n. sp.

Figs. 18-20.

Specific diagnosis.—*Longistriata*: Worms small, delicate, usually rolled in a loose spiral. Cervical inflation 45 to 60 μ long by 27 to 43 μ wide. Cuticular inflation with prominent longitudinal lines marked with cross-striations. Esophagus about 250 to 300 μ long and 20 to 25 μ wide in its terminal portion. Position of nerve ring and excretory pore not determined owing to condition of specimens.

Male 3.7 to 4 mm. long and 40 to 50 μ wide in maximum diameter. Bursa symmetrical, about 125 μ long and 300 μ wide when fully expanded. Ventro-ventral ray directed forward and widely separated from latero-ventral ray at the tip; latero-ventral ray slender and pointed, directed ventrad and extending to margin of bursa; externo-lateral thickest of bursal rays, directed toward lateral margin of bursa, but bending slightly forward before reaching margin. Medio-lateral ray straight and directed toward margin of bursa; postero-lateral ray originating from medio-lateral ray and directed dorsad, tips of two latter rays far apart. Externo-dorsal ray slender, originating from dorsal ray 30 μ from its base; dorsal ray about 75 μ long, dividing into 2 branches about 20 μ from distal end, each branch bifurcating at the tip; outer secondary branch longer than inner branch. Spicules straight, filiform, 340 to 360 μ long. Gubernaculum small, almost colorless, about 25 to 30 μ long by 15 μ wide. Genital cone well developed and prominent.

Female 4 to 4.7 mm. long, and 70 to 80 μ in maximum diameter in region of ovejector. Ovejector single, well developed, about 100 μ long. Vulva to anus, 50 to 60 μ ; anus to tip of tail, 40 to 60 μ . Tail ending in a sharp point. Eggs 55 to 65 μ long and 35 to 40 μ wide.

This nematode closely resembles *Longistriata vexillata* (Syn. *Heligmosomum vexillatum* Hall, 1916). It differs from the latter in the possession of a gubernaculum, in the absence of spurs on the dorsal ray between the origin of the externo-dorsal rays and the bifurcation, and in the absence of maculae on the bursal membrane.

Hosts.—*Ondatra zibethica* (Muskrat) and *Microtus pennsylvanicus* (Meadow mouse).

Location.—Small intestine.

Localities.—New Jersey, Indiana, and Minnesota, U. S. A.

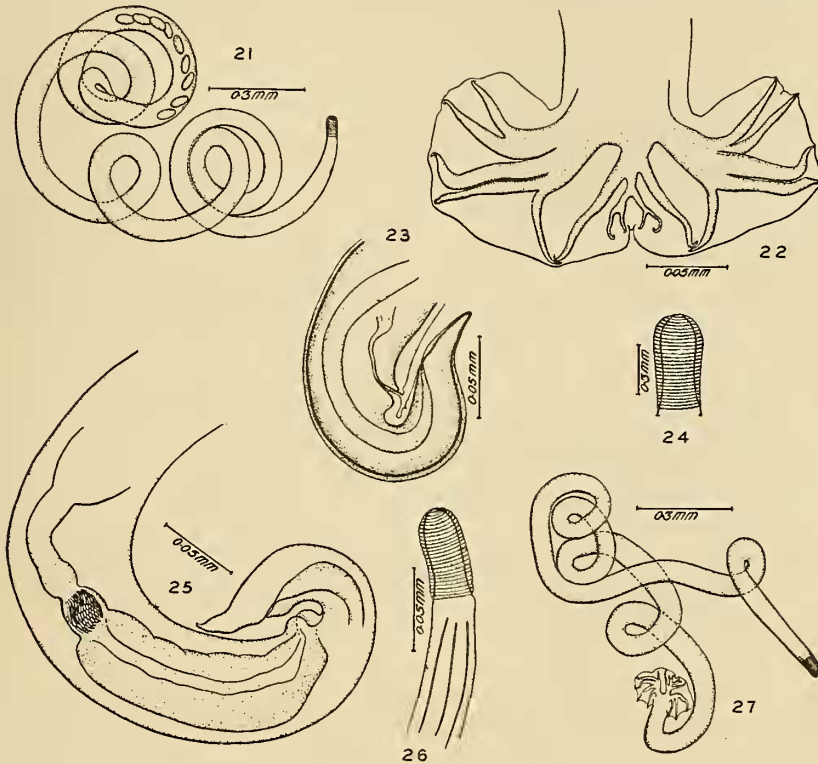
Type specimens.—U. S. National Museum Helminthological Collection No. 30459.

Longistriata noviberiae, n. sp.

Figs. 21-27.

Specific diagnosis.—*Longistriata*: Worms small, delicate, spirally coiled, bright red in color when freshly collected. Cephalic cuticle slightly inflated, showing distinct transverse striations; inflation 45 to 60 μ long by 25 to 30 μ wide. Cuticle of body inflated, showing longitudinal striae marked with cross-striations. Esophagus 270 to 300 μ long by 25 to 32 μ wide near its termination. Nerve ring 165 to 175 μ from anterior end. Excretory pore situated from 15 μ anterior to 25 μ posterior to termination of esophagus.

Male 4 to 5 mm. long by 55 to 65 μ in maximum diameter. Bursa symmetrical, about 130 to 150 μ long and 240 to 260 μ wide when expanded. Ventral rays of approximately the same size, divergent at tips and directed forward, reaching margin of bursa; latero-ventral ray terminating in a slight projection on bursal margin; externo-lateral and medio-lateral rays close together and parallel for greater part of their length, diverging near



Figs. 21-27.—*Longistriata noviberiae*. Fig. 21. Female. Fig. 22. Bursa. Fig. 23. Terminal portion of female. Figs. 24 and 26. Anterior portion of body, showing cervical inflation. Fig. 25. Posterior portion of female, showing ovejector. Fig. 27. Male.

their termination; externo-lateral ray bending sharply ventrad, and medio-lateral ray continuing straight to bursal margin; postero-lateral ray originating from medio-lateral ray, diverging sharply from latter, and directed dorsad, reaching posterior margin of bursa, tips of these two rays widely separated; externo-dorsals originating from a common stem with the dorsal ray and approaching posterior margin of bursa in close proximity to termination of postero-lateral rays; dorsal ray bifurcated, forming 2 fairly widely divergent branches, the latter also bifurcating to form 2 terminal branches. Bursal margin slightly indented in region of dorsal ray. Spicules slender, filiform and equal, 420 to 430 μ long. Gubernaculum present, about 35 μ long by 15 μ wide.

Female 5.5 to 6.5 mm. long by 75 to 80 μ wide in region of vulva. Tail pointed and bent sharply ventrad in all specimens examined. Vulva with 2

prominent lips, about 100 to 120 μ from tip of tail; anus 45 to 55 μ from tip of tail. Ovejector single, about 165 μ long. Eggs 70 to 75 μ long by 35 to 40 μ wide.

Host.—Rabbits (probably *Sylvilagus floridanus alacer* and *Sylvilagus palustris littoralis*).

Location.—Small intestine.

Locality.—Jeanerette, Louisiana, U. S. A.

Type specimens.—U. S. National Museum Helminthological Collection No. 30460.

THE GENUS LONGISTRIATA

In their key to the genera of the family Heligmosomidae, Yorke and Maplestone (1926), regard the spiral rolling of the body as a generic character, and on the basis of that character they separate the genera *Heligmosomum* and *Viannaia*. The acceptance of this feature as a character of generic value has led to confusion and has resulted in the inclusion in the genus *Viannaia* of nematodes which obviously do not belong to it. Schulz (4) proposed, therefore, the subgenus *Longistriata* in the genus *Viannaia* to include those nematodes in which the body is spirally rolled as in *Viannaia*, and in which there are comparatively long spicules and a cuticle distinctly marked with longitudinal striations as in *Heligmosomum*. Travassos and Darriba (6), after noting that the spiral rolling of the body cannot be considered as a distinguishing character, raised Schulz's subgenus *Longistriata* to the status of a genus, with *Longistriata depressa* (= *Strongylus depressus* Dujardin, 1845) as type, transferred several nematodes placed by Travassos (1921) in the genus *Heligmosomum* to the genus *Longistriata*, and made the genus *Heligmonella* Monnig, 1927, a synonym of the genus *Viannella* Travassos, 1918.

The genus *Heligmonella* was created by Monnig (3) with the following diagnosis: "Heligmosominae: body red, spirally coiled, cuticle with marked longitudinal striations; cephalic cuticle inflated and transversely striated. Male: bursa with ventral rays separate and diverging, postero-lateral diverging from externo- and medio-lateral, externo-dorsal arises from a common dorsal trunk, dorsal bifurcated near its extremity, the branches also bifurcated; spicules slender, gubernaculum distinct. Female: vulva near anus, a single uterus. Parasites in stomach and intestine of rodents."

The genus *Heligmonella* differs, therefore, markedly from the genus *Viannaia* in the character of the spicules and in the course and direction of the bursal rays, and its proposed inclusion in the genus *Viannaia* appears to be unwarranted. The genera *Longistriata* and *Heligmonella* resemble each other in the possession of (1) transversely striated cephalic inflation, (2) an expanded and longitudinally striated cuticle, (3) comparatively long and slender spicules, and (4) comparably directed bursal rays, and on the basis of these resemblances the genus *Heligmonella* is here made a synonym of the genus *Longistriata*.

Baylis (1) described a number of new species in the genus *Heligmonella*. These species also are here transferred to the genus *Longistriata*.

It is recognized that the nematodes described in this paper as *Longistriata musculi*, *L. norvegica* and *L. carolinensis*, while resembling other members of the genus *Longistriata* in the possession of an inflated and transversely striated cephalic cuticle, an expanded and longitudinally striated body cuticle, and long and slender spicules, differ from each other and from other members of this genus in the character and direction of the bursal rays, and that their inclusion in this genus may seem to be unwarranted. However, since only a limited amount of material was available for study it was not considered desirable to create new genera for them at the present time.

Heligmostrongylus hassalli Price, 1928, also is here placed in the genus *Longistriata* because in all other species of the genus *Heligmostrongylus* the dorsal ray is completely doubled and in *Heligmostrongylus hassalli* this feature is absent.

The generic diagnosis is amended as follows:

LONGISTRIATA

Generic diagnosis.—Heligmosomidae: Body more or less strongly rolled in a spiral. Cephalic cuticle inflated, marked with annular striations. Cuticle of body expanded and distinctly marked with transversely striated longitudinal lines, continuous or interrupted at intervals. Bursa symmetrical or asymmetrical, with well developed single bifurcated dorsal ray. Spicules comparatively long and slender. Gubernaculum present or absent. Female with well developed single ovejector close to posterior end of body. Vagina short. Vulva close to anus.

Type species.—*Longistriata depressa* (Duj., 1845).

KEY TO SPECIES OF LONGISTRIATA

- 1. Gubernaculum present and well developed. 2
 - Gubernaculum absent or rudimentary. 16
- 2. Longitudinal striae interrupted at regular intervals. *L. hassalli*
 - Longitudinal striae continuous. 3
- 3. Gubernaculum asymmetrical. *L. seurati*
 - Gubernaculum symmetrical. 4
- 4. Spicules 1 mm. long. *L. monnigi*
 - Spicules varying in length from 230 to 450 μ 5
- 5. Dorsal margin of bursa deeply indented. *L. cristata*
 - Dorsal margin of bursa only slightly indented or without indentation. . 6
- 6. Externo-dorsal rays originating separately from dorsal ray.
 - *L. carolinensis*
 - Externo-dorsal rays originating from a common stem with the dorsal ray. 7
- 7. Bursa asymmetrical. 8
 - Bursa symmetrical. 9

8. Bursa large, 500 to 600 μ wide; branches of dorsal ray close together and each provided with 2 terminations. *L. streptocerca*
 Bursa about 250 μ wide; branches of dorsal ray fairly wide apart and each provided with 3 terminations. *L. trifurcata*
9. Branches of dorsal ray as long as or longer than main stem. *L. intermedia*
 Branches of dorsal ray shorter than main stem. 10
10. Externo-dorsal rays very slender. *L. dalyrplei*
 Externo-dorsal rays comparatively stout. 11
11. Terminal branches of dorsal ray equal. *L. wolgaense*
 Terminal branches of dorsal ray unequal. 12
12. Males 2.6 to 3.25 mm. long; females 3.4 to 3.9 mm. long. 13
 Males 3.8 to 5.5 mm. long; females 5.5 to 9.2 mm. long. 14
13. Spicules 400 μ long by 4 to 5 μ wide; vulva 120 μ from tail end. *L. affinis*
 Spicules 230 to 280 μ long by 2.5 μ wide; vulva 150 μ from tail end.
 *L. gracilis*
14. Spicules 270 to 360 μ long; vulva 150 μ from tail end. *L. impudica*
 Spicules 410 to 430 μ long; vulva either 120 μ or 165 μ from tail end. . . . 15
15. Spicules 410 μ long; vulva 165 μ from tail end; ovejector 310 μ long.
 *L. spira*
 Spicules 420 to 430 μ long; vulva 120 μ from tail end; ovejector 165 μ long. *L. noviberiae*
16. Dorsal ray with accessory branch. *L. vexillata*
 Dorsal ray without accessory branch. 17
17. Stem of dorsal ray 20 μ wide. *L. norvegica*
 Stem of dorsal ray 5 to 15 μ wide. 18
18. Externo-dorsal rays largest of bursal rays; distal ends of spicules enlarged. *L. musculi*
 Externo-dorsal rays larger than some and smaller than other bursal rays; distal ends of spicule not enlarged. 19
19. Spicules 600 to 800 μ long. 20
 Spicules 340 to 560 μ long. 22
20. Dorsal ray doubled for more than half its length. . . . *L. nematodiriforme*
 Dorsal ray divided into 2 branches, each less than half the length of dorsal ray. 21
21. Externo-dorsal ray very slender; inner branch of terminal bifurcation of dorsal ray with slight projection. *L. didelphe*
 Externo-dorsal ray stout; inner branch of terminal bifurcation of dorsal ray without projection. *L. alpha*
22. Terminal branches of dorsal ray not divided. *L. gamma*
 Terminal branches of dorsal ray divided. 23
23. Terminal branches of dorsal ray equal. *L. delta*
 Terminal branches of dorsal ray unequal, outer branch longer. *L. beta*
Longistriata adunca Chandler, 1932, is similar to *L. norvegica*, differing only in the presence of a gubernaculum described for *L. adunca*.

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BOTANY.—*Certain Desmonci (Palmae) of Central America and Mexico*,¹ H. H. BARTLETT, University of Michigan.²

The genus *Desmoncus* provides one of the characteristic features of tropical American vegetation. It is often remarked that in the western hemisphere the *Desmonci* take the place of the far more viciously armed climbing palms of the Oriental tropics, such as *Calamus* and *Daemonorops*, which are systematically not closely related, but in their climbing habit, armature, and ecological relations offer some points of resemblance.

To secure specimens of the climbing palms takes much of a collector's time and effort, since they are often not found in fertile condition or easily secured even if found, because of their spininess and difficulty of disengaging them from the limbs of the trees through which they clamber. Good specimens are therefore disproportionately rare in our herbaria, in consideration of their importance in the composition of the tropical forest. Many of the described species are inadequately known, and it has become customary to use a few names as catch-alls for very distinct plants.

It appears that the species of *Desmoncus* are in reality rather local in distribution, and that much careful work on the part of collectors and herbarium botanists will be required to ascertain their ranges and characteristics.

In British Honduras and Guatemala the writer came in contact with a group of *Desmonci* related to *D. chinantlensis* Liebm., which

¹ Received November 20, 1934.

² Papers from the Department of Botany and the Herbarium of the University of Michigan, no. 508.